

APPENDIX A

**ARIZONA DEPARTMENT OF
TRANSPORTATION
LOCAL PUBLIC AGENCY
CERTIFICATION ACCEPTANCE
QUALITY ASSURANCE
REQUIREMENTS**

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QUALITY ASSURANCE REQUIREMENTS****TABLE OF CONTENTS**

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A1. SCOPE

It is the objective of this document for the Arizona Department of Transportation (ADOT) to define the Quality Assurance requirements for any Local Public Agency (LPA) that has been granted Certification Acceptance (CA) status to administer Federal-Aid construction projects. The LPA Quality Assurance requirements described herein have been developed by ADOT Materials Group, Quality Assurance Section to provide consistent implementation and supporting documentation in accordance with the Code of Federal Regulations (23 CFR 637, Subpart B), *“Quality Assurance Procedures for Construction”* (See **Appendix D**). Appendix A has been developed with the understanding that significant portions of the Phoenix and Tucson metropolitan areas will be designated as part of the National Highway System (NHS) under Federal Authorization MAP-21.

The LPA Quality Assurance process is composed of the following main components:

- Qualification of Testing Personnel
- Qualification of Laboratories
- Pre-Construction Approval by ADOT of the LPA Materials Sampling and Testing Plan
- Acceptance Sampling and Testing
- Independent Assurance (I.A.) Sampling and Testing
- Certificates of Compliance and Certificates of Analysis
- Buy America Requirements for Steel and Iron Products
- Final Certification of Materials
- Records Retention and Audit Requirements

To determine compliance with applicable regulations, the contractual relationship between the acceptance laboratory, sampling/testing personnel, contractor, and LPA must be clearly defined.

A2. LIST OF ABBREVIATIONS

AAP	AASHTO Accreditation Program
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ADOT	Arizona Department of Transportation
ATTI	Arizona Technical Testing Institute
CA	Certification Acceptance
CFR	Code of Federal Regulations
I.A.	Independent Assurance Sampling and Testing Program
LPA	Local Public Agency
MAP-21	"Moving Ahead for Progress in the 21st Century" Act
NHS	National Highway System

A3. LIST OF FIGURES

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A4. QUALIFICATION OF SAMPLING AND TESTING PERSONNEL

All field and laboratory personnel performing sampling or testing of construction materials on a LPA construction project must have the certifications shown in **Figure A1**, as applicable for the scope of the project.

Soils and Aggregate	
<u>Field</u>	<u>Laboratory</u>
Arizona Technical Testing Institute (ATTI) "Field" certification.	Arizona Technical Testing Institute (ATTI) "Laboratory Soils/Aggregate" certification.
Asphaltic Concrete	
<u>Field</u>	<u>Laboratory</u>
Arizona Technical Testing Institute (ATTI) "Field" certification.	Arizona Technical Testing Institute (ATTI) "Asphalt" certification.
Concrete	
<u>Field</u>	<u>Laboratory</u>
American Concrete Institute (ACI) "Concrete Field Testing Technician Grade I" certification.	American Concrete Institute (ACI) "Concrete Strength Testing Technician" certification.

REQUIREMENTS FOR SAMPLING AND TESTING TECHNICIANS

Figure A1

A5. QUALIFICATION OF LABORATORIES

ADOT recognizes the AASHTO Accreditation Program (AAP) in conjunction with AASHTO R 18, *"Establishing and Implementing a Quality Management System for Construction Materials Laboratories"*, for a laboratory to demonstrate competency in the performance of specific tests on construction materials. All laboratories that perform construction materials testing on LPA construction projects must be AAP accredited in the testing procedures performed.

A6. PRE-CONSTRUCTION APPROVAL OF THE LPA MATERIALS SAMPLING AND TESTING PLAN

The LPA will submit the following documents to the ADOT Materials Group, Quality Assurance Engineer for approval prior to beginning construction:

1. Bid Schedule that shows the Item Number, Item Description, Unit, and Quantity of project construction materials and activities. **Figure A2** shows an example Bid Schedule.

2. Materials Sample Checklist that details the scope of the proposed sampling and testing. The materials that are to be sampled and tested, as well as the frequency at which the sampling and testing are to be performed, is to be shown on the Materials Sample Checklist. **Figure A3** shows an example Materials Sample Checklist.

3. Materials Certificate Log that lists Certificates of Compliance and Certificates of Analysis that will be required during construction. An example Materials Certificate Log is shown in **Figure A4**.

4. Statement that details the contractual relationship between the acceptance laboratory, independent assurance laboratory, field sampling/testing personnel, contractor, and the LPA. If the acceptance laboratory or the independent assurance laboratory receives payment from the contractor, that relationship must be clearly defined.

A flow chart showing the process listed above is given in **Figure A5**.

A7. ACCEPTANCE SAMPLING AND TESTING

Acceptance Sampling and Testing is separate from Independent Assurance Sampling and Testing.

It is the responsibility of the Local Public Agency to develop a Sampling Guide which outlines the requirements for Acceptance Sampling and Testing. The guide shall be submitted to the ADOT Materials Quality Assurance Engineer for review and approval.

An LPA Central Laboratory may perform both Acceptance Sampling and Testing and Independent Assurance Sampling and Testing on a particular project. However, the same individual shall not perform both the Acceptance Sampling and Testing and the Independent Assurance Sampling and Testing.

A laboratory other than an LPA Central Laboratory shall not perform both Acceptance Sampling and Testing and Independent Assurance Sampling and Testing on a particular project.

BID SCHEDULE

Project Number: ()

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
4040116	APPLY BITUMINOUS TACK COAT	HOOR	260		
4040125	FOG COAT	TON	2		
4040163	BLOTTER MATERIAL	TON	10		
4040264	ASPHALT BINDER (PG 64-22)	TON	2,260		
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	1,350		
4140040	ASPHALTIC CONCRETE FRICTION COURSE (ASPHALT-RUBBER)	TON	9,350		
4140042	ASPHALT RUBBER MATERIAL (FOR AR-ACFC)	TON	890		
4140044	MINERAL ADMIXTURE (FOR AR-ACFC)	TON	85	\$90.00	\$7,650.00
4160002	ASPHALTIC CONCRETE (3/4" MIX) (END-PRODUCT)	TON	45,200		
4160031	MINERAL ADMIXTURE	TON	430	\$90.00	38,700.00
6070060	FOUNDATION FOR SIGN POST (CONCRETE)	EACH	40		
7015041	TEMPORARY PAINTED MARKING (ARROW, SYMBOL, OR LEGEND)	EACH	6		
70115042	TEMPORARY PAINTED MARKING (STRIPE)	L. FT.	231,000		
70116030	BARRICADE (TYPE II, VERT. PANEL, TUBULAR MARKER)	EACH-DAY	2,250		

EXAMPLE BID SCHEDULE

Figure A2

**LOCAL PUBLIC AGENCY
MATERIALS SAMPLE CHECKLIST**

PROJECT LOCATION: () PROJECT NUMBER: ()

(Date)

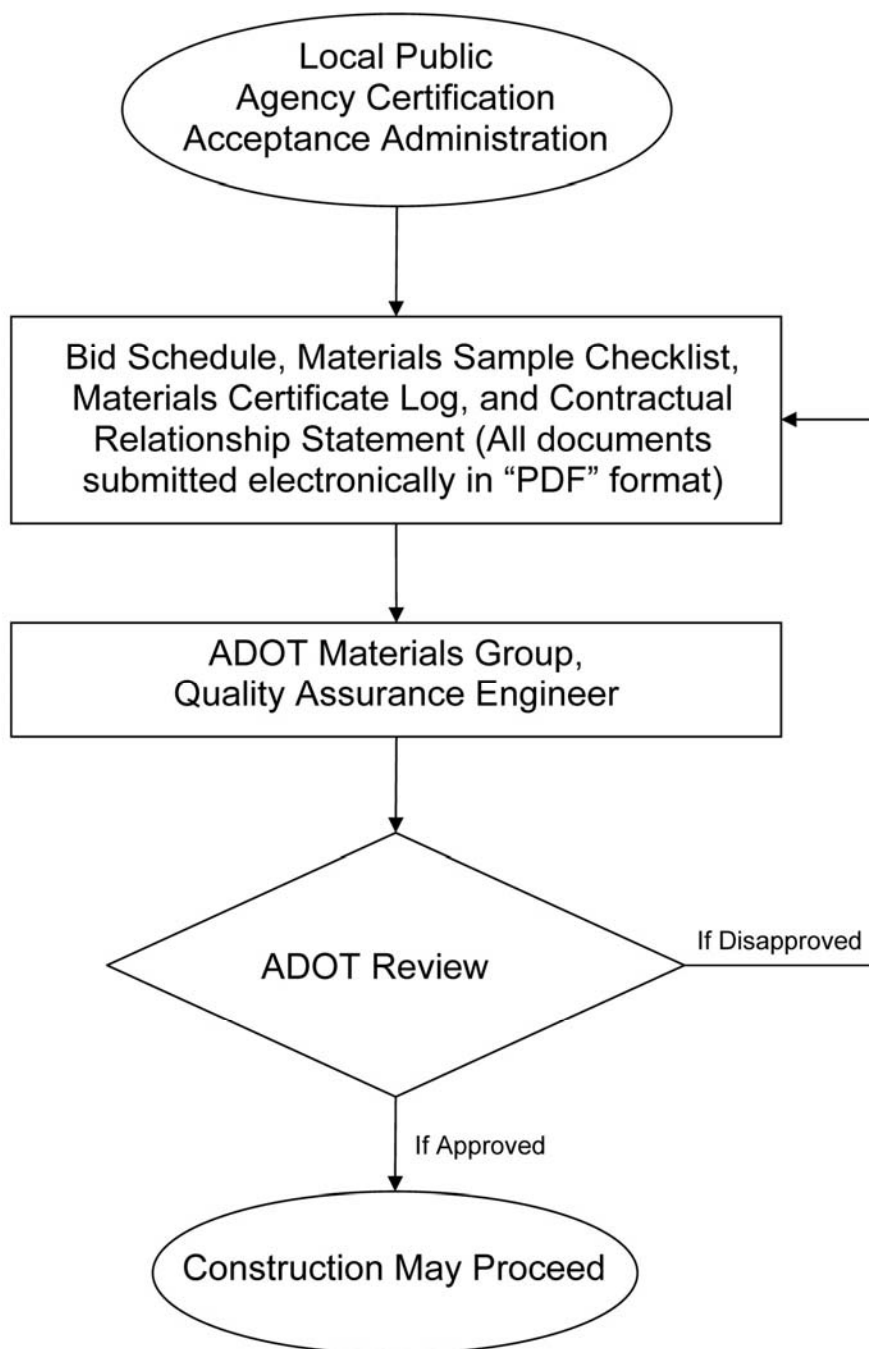
ITEM NUMBER	MATERIAL	PLAN QUANTITY	ACTUAL QUANTITY IF VARIES FROM PLAN QUANTITY	NUMBER OF SAMPLES		NUMBER OF SAMPLES TESTED	
				RECOMMENDED		PROJECT	
				A C C P	I A S	ACC P S A M P L E S T A K E N B Y P R O J E C T	ACC P S A M P L E S T E S T E D B Y P R O J E C T
4040264	Asphalt Binder (PG 64-22)	470 T		5			
4140040	Asphaltic Concrete Friction Course (Asphalt-Rubber) AR-ACFC						
		2,650 T		4			
	Mineral Aggregate for AR-ACFC	2,438 T		5	1		
4140042	Asphalt Rubber Material (for AR-ACFC)	240 T		2			
	Binder for Asphalt Rubber Material	200 T		2			
	Rubber for Asphalt Rubber Material	40 T		1			
41600004	Asphaltic Concrete (End-Product) (Special Mix)	9,400 T		20	1		
	Mineral Aggregate for AC (End Product) (Special Mix)	8,836 T		4	1		

EXAMPLE MATERIALS SAMPLE CHECKLIST

Figure A3

44-4409 R02/04

Figure A4



**PRE-CONSTRUCTION APPROVAL OF THE LPA MATERIALS
SAMPLING AND TESTING PLAN FLOW CHART**

Figure A5

Acceptance Sampling and Testing may be performed by:

- Local Public Agency sampling and testing personnel.
- An independent consultant laboratory selected and compensated by the Local Public Agency.
- Contractor sampling and testing personnel.
- An independent consultant laboratory selected and compensated by the contractor.

A8. INDEPENDENT ASSURANCE (I.A.) SAMPLING AND TESTING

Independent Assurance Sampling and Testing is separate from Acceptance Sampling and Testing.

The LPA is responsible for administering the Independent Assurance Sampling and Testing.

An LPA Central Laboratory may perform both Independent Assurance Sampling and Testing and Acceptance Sampling and Testing on a particular project. However, the same individual shall not perform both the Independent Assurance Sampling and Testing and the Acceptance Sampling and Testing.

A laboratory other than an LPA Central Laboratory shall not perform both Independent Assurance Sampling and Testing and Acceptance Sampling and Testing on a particular project.

Independent assurance samples shall be obtained from project or processing facility by the LPA or by an independent consultant laboratory selected and compensated by the LPA.

If the acceptance testing is performed by the LPA, or an independent consultant laboratory which is selected and compensated by the LPA, the ratio of independent assurance sampling and testing is one I.A. per 20 acceptance tests.

If the acceptance testing is performed by the contractor, or an independent consultant laboratory which is selected and compensated by the contractor, the ratio of independent assurance sampling and testing is one I.A. per 5 acceptance tests.

Note: The increased frequency of I.A. sampling and testing when acceptance sampling and testing is performed by the contractor, or an independent consultant laboratory which is selected and compensated by the contractor, is utilized as verification of the contractor's acceptance testing.

When an LPA Central Laboratory does not perform both the independent assurance testing and the acceptance testing, each I.A. field sample shall be split between the laboratory performing the independent assurance testing and the laboratory performing the acceptance testing.

If the test results do not compare favorably, cooperative efforts to investigate and identify the cause of the discrepancy should commence immediately. As a minimum, these efforts should include a check of the test data, calculations, and results; an inspection of the equipment used to perform the testing; a discussion with the test operators regarding their knowledge of the procedure in question; retesting of samples; exchanging samples; and observation of each other's techniques. When the problem is isolated, the steps taken to resolve it shall be documented.

A9. CERTIFICATES OF COMPLIANCE AND CERTIFICATES OF ANALYSIS

Manufactured products that are accepted by the LPA through a Certificate of Compliance or Certificate of Analysis shall include, as a minimum:

- The current name, address, and phone number of the manufacturer or supplier of the material.
- A description of the material supplied.
- Quantity of material represented by the certificate.
- Means of material identification, such as label, lot number, or marking.
- A statement that the material complies in all respects with the requirements of the cited specifications.
- The name, title, and signature an individual has the legal authority to bind the manufacturer or the supplier of the material. The date of the signature shall also be given. In addition, a statement that the individual has such legal authority.

A10. BUY AMERICA REQUIREMENTS FOR STEEL AND IRON PRODUCTS

Steel and iron materials and products used shall comply with the current "Buy America" requirements of 23 CFR 635.410.

All steel and iron products permanently incorporated into a LPA project must be domestically produced and have appropriate certification statements provided by the manufacturer. Records for the steel and iron products must be traceable through heat numbers and mill certificates. Certification statements should be verified by visual inspection at the time of material delivery to the project site.

A11. FINAL CERTIFICATION OF MATERIALS

Following completion of the project construction, the LPA shall submit copies of the Testing Summaries and the Materials Certification/Exception Report to the Materials Group, Quality Assurance Engineer. The copies shall be submitted electronically in “pdf” format. The Materials Quality Assurance Engineer will review these items, and if necessary notify the LPA Project Engineer of any deficiencies that require correction. A flow chart illustrating this process is shown in **Figure A7**.

A11.1 Submittal of Testing Summaries

The LPA shall submit copies of the project testing summaries to the ADOT Materials Group, Quality Assurance Engineer. As a minimum, the testing summaries must include the following:

1. Name of laboratory and technician that performed the testing, and the date the testing was performed.
2. Summary of test results. The summary shall include a comprehensive report of all test results.

A11.2 Exception Reporting Requirement

The materials records for each project shall be reviewed by the LPA Project Engineer. A “Materials Certification / Exception Report” shall then be prepared by the LPA Project Engineer. The Materials Certification / Exception Report must include at a minimum the following statement:

“I certify that I have reviewed the materials records for the above referenced project. The results of the tests used in the acceptance program indicate that the materials incorporated in the construction work, and the construction operations controlled by sampling and testing, were in conformity with the approved plans and specifications. In addition, all material sampling and testing was performed in accordance with the Approved LPA Materials Sampling and Testing Plan.”

Construction materials that failed to meet specification requirements, but were incorporated in the project, must be summarized in the Materials Certification/Exception Report with a detailed explanation listing penalties or justification for acceptance.

An example Materials Certification / Exception Report is given in **Figure A6**.

The Materials Certification / Exception Report shall be submitted to the Materials Group, Quality Assurance Engineer under seal of a professional engineer registered the State of Arizona.

A12. RECORDS RETENTION AND AUDIT REQUIREMENTS

The LPA shall maintain all test reports, certificates, and test summaries for a minimum of five years after the project has been completed. All records shall be available for review by ADOT at any time while the project is in construction or during the five year retention period.

(Local Public Agency Letterhead)

(Date)

TO: (Name)
Quality Assurance Engineer
ADOT Materials Group
1221 N. 21st Avenue
Phoenix, AZ 85009

FROM: Name of Project Engineer
(LPA Name)

RE: MATERIALS CERTIFICATION/EXCEPTION REPORT

PROJECT: (Project Name from the plans and specifications)
(TRACS Number)
(Federal ID Number)

I certify that I have reviewed the materials reports for the above referenced project. The results of the tests used in the acceptance program indicate that the materials incorporated in the construction work, and the construction operations controlled by sampling and testing were in conformity with the approved plans and specifications. In addition, all materials sampling and testing was performed in accordance with the Approved LPA Materials Sampling and Testing Plan. Exceptions to the above certification are as follows:

1. *List any materials that were incorporated in the completed construction project where testing indicated non-conformance to the plans and specifications. If Materials Quality penalties were imposed or contract change orders associated with Material Quality were initiated, list the specific details of those agreements.*

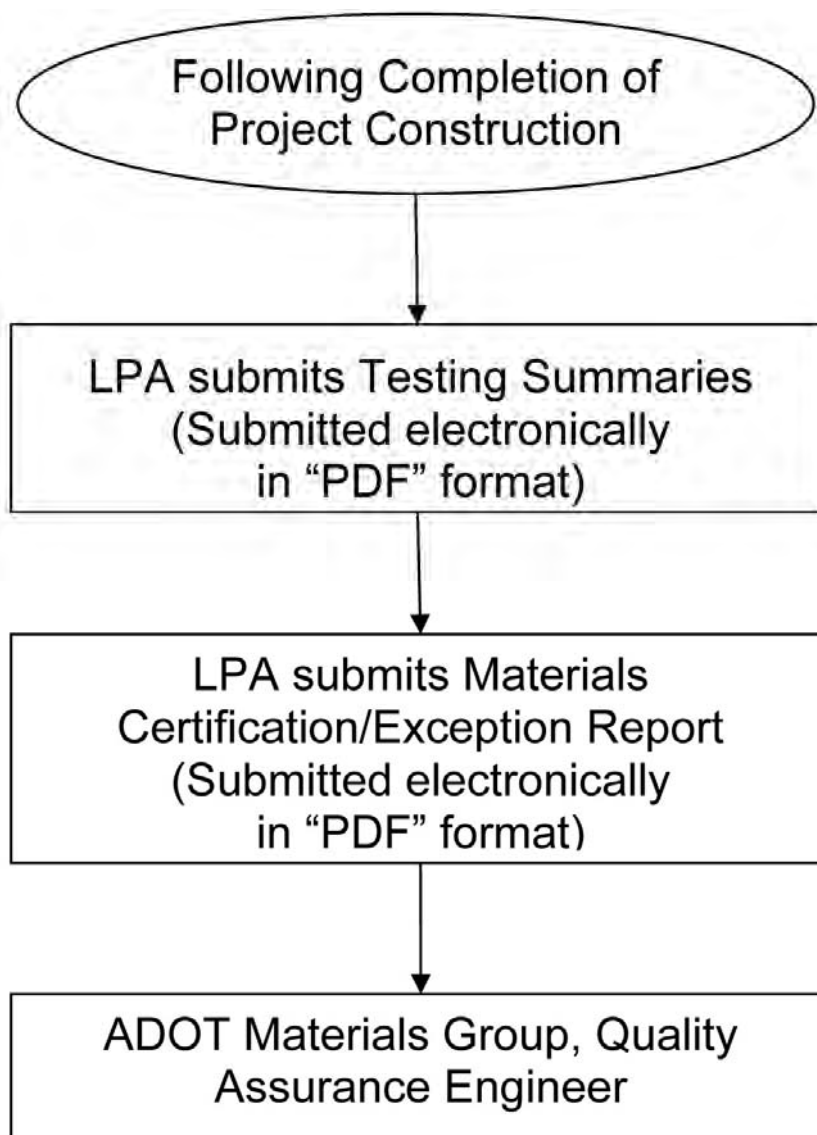
2. *List any item that were not sampled and testing as indicated in the Approved LPA Materials Sampling and Testing Plan and provide details on how the LPA plans to prevent recurrence of the sampling and testing deficiencies on future projects.*



LPA Project Engineer

EXAMPLE MATERIALS CERTIFICATION/EXCEPTION REPORT

Figure A6



FINAL CERTIFICATION OF MATERIALS FLOW CHART

Figure A7